Customer Demand Drives the Economics of Disruption

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5G economical challenge

European Telco Industry currently returns below its cost of capital.

- Modernised Integrated Incumbents may be the only Telcos to afford full scale 5G deployment*

![Return on Capital Employed (ROCE) graph]

- Virtualisation (NFV, SDN, CDN, F/MEC...) all help, but even collectively, they will not solve the ROCE issue

- To deliver 100% improvement in Operational Efficiency, that will enable investment for 95% population coverage, we need to be bolder

- Structural changes may be required to deliver against 5G expectations

* KPMG “Cost of capital study English 2014 KPMG” study relates to Europe.
Gigabit customer demand drives Terabit Network

- Mobile Data is forecast to grow at ~50% per annum, 7X today's traffic by 2021*
- Mobile video traffic was ~60% of mobile data traffic in 2016*
- Video will account for ~80% of the world's mobile data traffic by 2021*
- Most video today is SD, according to Netflix; HD (1080) is 4X, UHD (4K) is 10X

Global Mobile Data Traffic Forecast by Region

Source: *Cisco VNI Mobile, 2017

We need more radical approaches to deliver Capital Efficiency

The Industry needs to collaborate for significantly more efficient and intelligent networks
New Thinking for IP access

- Bringing fiber closer to the customer.
- 5G as last-mile point-to-multipoint access.
- Do we need traditional Optical Line Terminations / Multi Service Access Networks?
- Do we need a datacenter in the street cabinet?
- Datacenter technologies can help, can we learn from the experts?
- Innovation driven development
A NEW VISION FOR FIXED ACCESS & MOBILE CORE

- Program Services instead of re-architecting Network & OSS for each new service.
- Community-driven, more disruptive innovation.
- Cloud & Software mindset.
- Sharing of best practices – Telco & Internet Companies.
- Use of standardized HW
- Enable multi-vendor approach
TIP – Over 400 Members
New Thinking for RAN deployments

- Vertically integrated and closed
- Lack of programmability and flexibility
- Slow innovation (2-6 years innovation cycle)
- Very high entry barrier

Agree

Deploy

Implement

Specialized Features

Specialized CP

Specialized HW
xRAN – An alternative VISION for RAN development

- HW & SW tightly coupled
- Monolithic SW implementation
- Specialized HW
- Closed interfaces

Decouple HW from SW
Decouple User & Control plane
Modularize protocol stack
Open & standardize interfaces

- Use of standardized HW
- Enable better NW orchestration
- Provide NW programmability
- Enable multi-vendor approach
Virtualisation will only take us so far, and it’s not far enough

We need more radical approaches to deliver Capital Efficiency

Future Networks will be disaggregated – Hardware and Software are separated to allow programmable capabilities for automation, flexibility and network control

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